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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,884	01/30/2004	Yoshio Asakura	8007-1057	4174
466	7590	12/13/2005	EXAMINER	
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			NUTTER, NATHAN M	
		ART UNIT		PAPER NUMBER
		1711		

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/766,884	ASAKURA ET AL.
	Examiner Nathan M. Nutter	Art Unit 1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-17 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. ____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>04-04, 08-04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: ____                                     |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 12-15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuda et al (US 6,191,226), newly cited.

The reference to Matsuda et al (US 6,191,226) teaches the manufacture of a "rubber-modified high impact polystyrene composition containing a rubbery polymer, wherein the rubbery polymer is modified polybutadiene obtained by modifying high-cis/high-vinyl polybutadiene in the presence of a transition metal catalyst," as herein claimed. The patent teaches the use of a high-cis/high-vinyl polybutadiene having "a content of a cis-1,4 structure (of) at least 80 wt %," overlapping with that of claims 3 and 13 at between 80 to 95 mol %, and a "content of a 1,2-vinyl bond (at) generally 1 to 10 wt %," overlapping with that recited in claims 3 and 13 at from 4 to 10 wt %. Note the Abstract and column 4 (lines 39-52) for these teachings. The transition metal catalyst employed to modify the polybutadiene as recited in claims 4 and 5 is taught at column 5 (line 59) to column 6 (line 25). The employment of the modified polybutadiene resin in a polystyrene composition is taught at column 7 (lines 29-65). The relative proportions of the components, as recited in instant claim 7, is taught at column 8 (lines 37-45). The

employment of flame retardants, as recited in claim 8, is taught at column 10 (lines 24-53). The employment of a peroxide, as recited in claim 9, is shown at column 9 (lines 16-33). The patent teaches the use of rubber particles having a particle size range of "from 0.01 to 10 $\mu$ m," totally embracing that recited in instant claims 10 and 15, at the paragraph bridging column 9 to column 10. Further, the reference teaches an intrinsic viscosity for the polybutadiene as "ranging from 1.0 to 6.0 as measured at 30° C in a toluene solution," which clearly is embraced by that recited in claim 14. Since all parameters disclosed by the reference are identical to those recited broadly herein, the recitations of claims 2, 12 and 17, wherein the composition is defined by physical characteristics, i.e. "wherein the high-cis/high-vinyl polybutadiene has a 5 wt % styrene solution viscosity (St-cp; at 25°C) to Mooney viscosity (ML<sub>1+4</sub>; at 100°C) ratio (St-cp/ML<sub>1+4</sub>) ranging from 2.0 to 7.0" is deemed to be anticipated by the reference since there is nothing recited in either claim 2, 12 or 17 that distinguishes chemically from that broadly claimed. Likewise, the recitations in claims 6, 12 and 17, with regard to the "cold flow rate of less than 20 mg/min.," for the polybutadiene, would be inherent, as well, since there is nothing recited that distinguishes these claims from the broadly claimed resin.

Claims 1-8, 10, 12, 13, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Asakura et al (US 5,981,667), newly cited.

The patent to Asakura et al (US 5,981,667) discloses the manufacture of a "rubber-modified high impact polystyrene composition containing a rubbery polymer, wherein the rubbery polymer is modified polybutadiene obtained by modifying high-

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cis/high-vinyl polybutadiene in the presence of a transition metal catalyst," as herein claimed. The patent teaches the use of a high-cis/high-vinyl polybutadiene having "from 65 to 95 % cis-1,4 structures and from 30 to 4% 1,2 structures," both totally embracing those recited in claims 3 and 13. Note the Abstract and column 2 (lines 40-56) for these teachings. Note column 14 (lines 6-14) for the use of the transition metal catalyst to modify the polybutadiene as recited in claims 4 and 5. The employment of the modified polybutadiene resin in a polystyrene composition is taught at the Abstract and throughout the patent. The relative proportions of the components, as recited in instant claim 7, is taught at column 2 (lines 41-56). The employment of flame retardants, as recited in claim 8, is taught at column 14 (lines 25-33). The patent teaches the use of rubber particles having a particle size range of "from 0.5 to 7 $\mu$ m," totally embracing that recited in instant claims 10 and 15, at column 4 (lines 32-41). Further, the recitations of "wherein the high-cis/high-vinyl polybutadiene has a 5 wt % styrene solution viscosity (St-cp; at 25°C) to Mooney viscosity (ML<sub>1+4</sub>; at 100°C) ratio (St-cp/ML<sub>1+4</sub>) ranging from 2.0 to 7.0" is shown by the reference at column 3 (lines 14-20). Since all parameters disclosed by the reference are identical to those recited broadly herein, the recitations of claims 6, 12 and 17, wherein the composition is defined by physical characteristics, i.e. "cold flow rate of less than 20 mg/min.," for the polybutadiene, would be inherent since there is nothing recited that distinguishes these claims from the broadly claimed resin.

Claims 1-4, 6, 7, 9, 12-14 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ibaragi et al (US 4,183,877), newly cited.

The reference to Ibaragi et al (US 4,183,877) teaches the manufacture of a "rubber-modified high impact polystyrene composition containing a rubbery polymer, wherein the rubbery polymer is modified polybutadiene obtained by modifying high-cis/high-vinyl polybutadiene in the presence of a transition metal catalyst," as herein claimed. The patent teaches the use of a high-cis/high-vinyl polybutadiene having a "1,2-vinyl content of more than 15 to 35% and cis-1,4 content of 20 to 85%," which embraces the instantly claimed vinyl content of 4 to 30 mol% at 15 to 30 % and a cis-1,4 content of 65 to 85%, as recited in claims 3 and 13. Note the Abstract for these teachings. The transition metal catalyst employed to modify the polybutadiene as recited in claims 4 and 5 is taught at column 3 (line 40) to column 4 (line 13). The employment of the modified polybutadiene resin in a polystyrene composition is taught at the Abstract and throughout the reference. The relative proportions of the components, as recited in instant claim 7, is taught at column 2 (lines 29-44). The employment of a peroxide, as recited in claim 9, is shown at column 5 (lines 18-51). Since all parameters disclosed by the reference are identical to those recited broadly herein, the recitations of claims 2, 12 and 17, wherein the composition is defined by physical characteristics, i.e. "wherein the high-cis/high-vinyl polybutadiene has a 5 wt % styrene solution viscosity (St-cp; at 25°C) to Mooney viscosity (ML<sub>1+4</sub>; at 100°C) ratio (St-cp/ML<sub>1+4</sub>) ranging from 2.0 to 7.0" is deemed to be anticipated by the reference since there is nothing recited in either claim 2, 12 or 17 that distinguishes chemically from that broadly claimed. Likewise, the recitations in claims 6, 12 and 17, with regard to the "cold flow rate of less than 20 mg/min.," for the polybutadiene, would be inherent,

as well, since there is nothing recited that distinguishes these claims from the broadly claimed resin.

Claims 1-7, 12, 13 and 17 are rejected under 35 U.S.C. 102(b) as anticipated by Tsujimoto et al (US 4,579,920), newly cited.

The reference to Tsujimoto et al (US 4,579,920) teaches the manufacture of a "rubber-modified high impact polystyrene composition containing a rubbery polymer, wherein the rubbery polymer is modified polybutadiene obtained by modifying high-cis/high-vinyl polybutadiene in the presence of a transition metal catalyst," as herein claimed. The patent teaches the use of a high-cis/high-vinyl polybutadiene having "a 1,2 microstructure content of 7 to 50%," and "a cis-1,4 microstructure content of at least 50%." The 1,2 vinyl content overlaps with the instant claims at 7 to 30% and the cis-1,4 content totally embracing that of the instant claims. Note the Abstract, column 2 (lines 51-63) and column 6 (lines 34-53) for these teachings. The transition metal catalyst employed to modify the polybutadiene as recited in claims 4 and 5 is taught at column 2 (lines 44-63). The employment of the modified polybutadiene resin in a polystyrene composition, and the relative proportions of the components, is taught at column 6 (lines 54-66). Since all parameters disclosed by the reference are identical to those recited broadly herein, the recitations of claims 2, 12 and 17, wherein the composition is defined by physical characteristics, i.e. "wherein the high-cis/high-vinyl polybutadiene has a 5 wt % styrene solution viscosity (St-cp; at 25°C) to Mooney viscosity (ML<sub>1+4</sub>; at 100°C) ratio (St-cp/ML<sub>1+4</sub>) ranging from 2.0 to 7.0" is deemed to be anticipated by the reference since there is nothing recited in either claim 2, 12 or 17 that distinguishes

chemically from that broadly claimed. Likewise, the recitations in claims 6, 12 and 17, with regard to the "cold flow rate of less than 20 mg/min.," for the polybutadiene, would be inherent, as well, since there is nothing recited that distinguishes these claims from the broadly claimed resin.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al (US 6,191,226), Asakura et al (US 5,981,667) or Ibaragi et al (US 4,183,877), as applied to claims rejected above above, and further in view of Suzuki et al (US 6,664,347), newly cited.

The references to Matsuda et al (US 6,191,226), Asakura et al (US 5,981,667) and Ibaragi et al (US 4,183,877) are all relied upon for their teachings as indicated above.

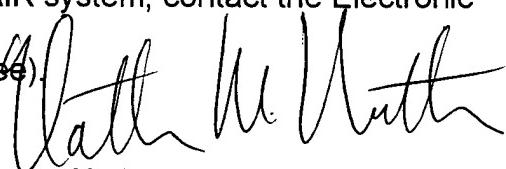
The reference to Suzuki et al (US 6,664,347) is relied upon to show the rubber particles recited in claims 11 and 16 employed as a modified polybutadiene. The polybutadiene of the reference is identically disclosed at the Abstract, column 2 (lines 28-59) and the many Examples. The employment of the polybutadiene resin of Suzuki

et al (US 6,664,347) in the composition of either primary reference as replacement for the polybutadiene resins disclosed in each would have been *prima facie* obvious to an artisan of ordinary skill at the time the invention was made. No unexpected results are shown on the record to indicate otherwise.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan M. Nutter whose telephone number is 571-272-1076. The examiner can normally be reached on 9:30 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nathan M. Nutter  
Primary Examiner  
Art Unit 1711

nmm

11 December 2005